

4.7 Interface Management

4.7.1 Introduction to Interface Management

Interface Management, **which includes identification, definition, and control of interfaces, is an element of System Engineering (SE) that helps to ensure that all the pieces of the system work together to achieve the system's goals and continue to operate together as changes are made during the system's lifecycle.** Precisely defining interfaces early in the program is crucial to successful and timely system development. As the total system is decomposed into functional areas, functional interfaces between the areas are identified. These interfaces typically have functional data parameters with associated data requirements or mechanical, electrical, and space requirements. The Interface Requirements Document (IRD) contains performance, functional, and physical interface requirements. The Interface Management process enters the Acquisition Management Systems (AMS) process during Mission Analysis and continues through In-Service Management. Figure 4.7-1, the Process Based Management (PBM) chart, illustrates the essential elements of the Interface Management process. This figure lists the key inputs to initiate the step, providers, process steps, outputs, and customers of process outputs. It also shows the beginning and ending boundary steps and intermediate steps.

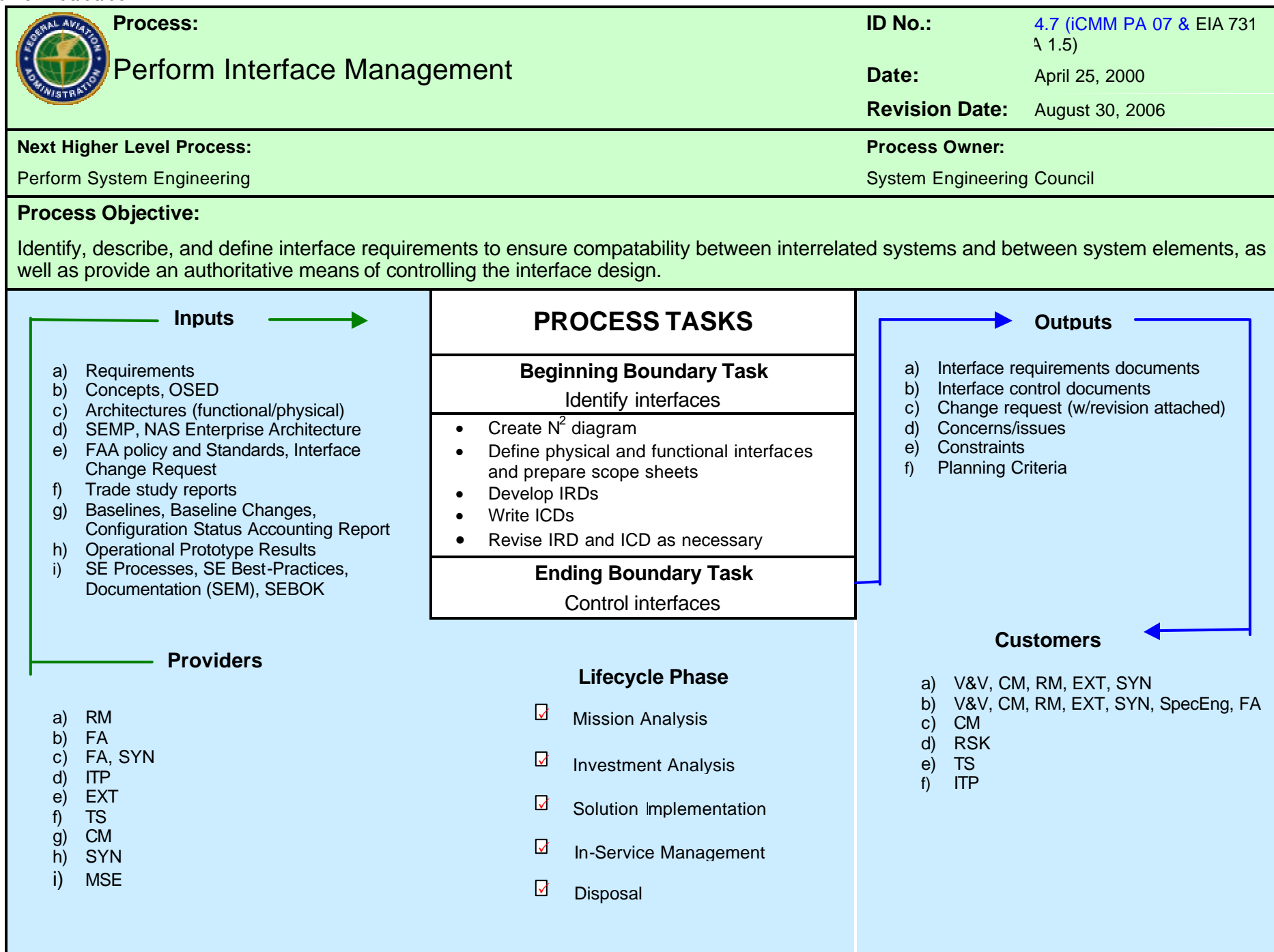


Figure 4.7-1. Interface Management Process-Based Management Chart
4.7-2

4.7.1.1 Interface Management Objectives

Interface Management identifies, describes, and defines interface requirements to ensure compatibility between interrelated systems and between system elements. It also provides an authoritative means of controlling the interface design.

The FAA uses the IRD to control interface requirements, while the Interface Control Document (ICD) controls interface design. These documents:

- Define and illustrate performance, physical, and functional characteristics in sufficient detail to ensure that all details on the interface can be determined solely from the information in the IRD/ICD
- Identify required interface data and monitor submission of this data
- Control the interface requirements and design to prevent any changes to characteristics that might affect compatibility with other systems and equipment
- Communicate coordinated interface requirements and design decisions as well as interface requirements/design changes to program participants

4.7.1.2 Types of Interfaces

An interface is the performance, functional, and physical attributes required to exist at a common boundary. Internal interfaces are within the defined system's boundary. External interfaces are with elements outside the defined system's boundary. The external/internal interface distinction relates to the level of ownership and the verification of the requirements associated with each interface. Examples of interface types that may be encountered appear in Table 4.7-1. Each element of the system shall be described functionally and physically. A functional description describes what the system is intended to do. It includes subsystem functions as they relate to and support the system function. Functional Analysis (Section 4.4) provides more information on this topic. A physical description describes the composition and organization of the tangible system elements. The level of detail varies with the system's maturity, size, and complexity, with the end objective being adequate understanding of the system configuration and operation.

Table 4.7-1. Examples of Interface Types

Interface Type	Interface Subtype	Examples
Functional	Mechanical	Vehicle operator increasing speed A printer converting electronic information into a printed document
Physical	Mechanical	Transmission of torque via a drive shaft Connection between computer communication port and the printer cable

Table 4.7-1. Examples of Interface Types—Continued

Interface Type	Interface Subtype	Examples
Functional	Control	A control signal sent from a flight control computer through a cable to an actuator (two interfaces) A human operator selecting a flight management system mode
Physical	Control	The connection between the flight control computer and the cabling A human operator's fingers adjusting a flight management system mode switch
Functional	Aerodynamic	Pilot notification of a stall Vortices impacting on an aircraft
Physical	Aerodynamic	A stall indicator on a wing A fairing designed to prevent vortices from impacting a control surface on an aircraft
Functional	Environmental (Natural or Induced)	Maximum/minimum temperature of radar electronics The amount of rain/snow that makes a sensor reading anomalous
Physical	Environmental (Natural or Induced)	Increased volume of mercury in thermometer reaching new markers on temperature scale Wind impacting radar antenna surface
Functional	Noise	Minimum decibels required for an alert to be heard
Physical	Noise	Sound waves impacting on person's ear drum
Functional	Space	Space required to perform maintenance
Physical	Space	Inserting hardware into existing rack
Functional	Data	A cockpit visual display to a pilot Weather Message Switching Center Replacement to Weather and Radar Processor (WARP) data transfer
Physical	Data	Light from cockpit visual display impacting on pilot's retina Weather data bits moving from communications cable to communications port on WARP
Functional	Electrical	Energy from a direct current (DC) power bus supplied to an anti-collision light A fan plugged into an alternating current (AC) outlet for current An electrical circuit opening a solenoid Shielding and grounding for coaxial cables

Table 4.7-1. Examples of Interface Types—Continued

Interface Type	Interface Subtype	Examples
Physical	Electrical	Energy from a DC power bus supplied to the cabling connected to the anti-collision light Electrical current moving from AC outlet to fan wire Current flowing through wiring
Functional	Hydraulic	Pressurized fluid supplying power to a flight control actuator A fuel system pulling fuel from a tank to the engine
Physical	Hydraulic	Pressurized fluid in a hydraulic line Connection of fuel line to fuel tank
Functional	Pneumatic	An adiabatic expansion cooling unit supplying cold air to an avionics bay An air compressor supplying pressurized air to an engine air turbine starter
Physical	Pneumatic	Pressurized air in an aircraft
Functional	Electro-magnetic	Radio frequency (RF) signals from a Very High Frequency Omni directional Range (VOR) A radar transmission
Physical	Electro-magnetic	RF signals from a VOR vibrating radio receiver Radio waves emitted from radio transmitter
Functional	Heating, Ventilating, and Air-Conditioning (HVAC)	Amount of heating and cooling required for a facility Circuit protective devices for equipment racks
Physical	HVAC	Thermocouple contacting sensor Circuit breaker connection to power line

The 5M and SHELL Models (Figures 4.7-2 and 4.7-3, respectively) depict the types of interface elements that are recommended for consideration within most systems.

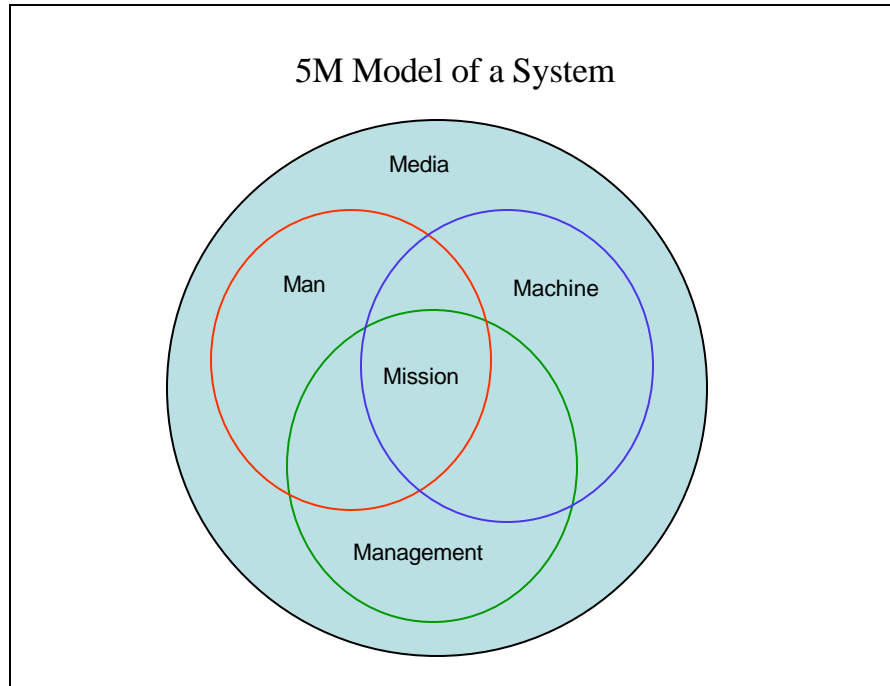
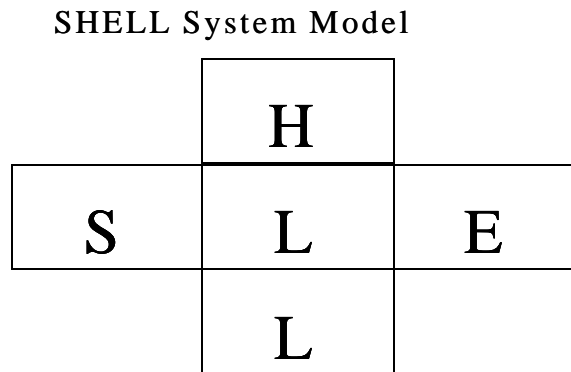


Figure 4.7-2. 5M Interface Model

The following is a description of the 5M Interface Model:

- **Mission:** the system's purpose or central function that brings together the other elements.
- **Man:** a system's human element. If a system requires humans for operation, maintenance, or installation, this element shall be considered in the system description.
- **Machine:** a system's hardware and software (including firmware) elements.
- **Management:** the procedures, policy, and regulations involved in operating, maintaining, installing, and decommissioning a system.
- **Media:** the environment in which a system shall be operated, maintained, and installed. This environment includes ambient and operational conditions. Ambient conditions are physical conditions involving temperature, humidity, lightning, electromagnetic effects, radiation, precipitation, and vibration. The operational environment consists of the conditions in which the mission or function is planned and carried out. Operational conditions are human-created conditions involving operations such as air traffic density, communication congestion, and workload. Part of the operational environment may be described by the type of operation (air traffic control, air carrier, general aviation); phase (ground taxiing, takeoff, approach, en route, transoceanic, landing); or rules governing the operation (Instrument Flight Rules versus Visual Flight Rules).

In the SHELL Model, the match or mismatch of the blocks (interface) is just as important as the characteristics described by the blocks themselves. These blocks may be rearranged to describe the system as required. A connection between two blocks indicates an interface between the elements.



S= Software (procedures, symbology, etc.)
H= Hardware (machine)
E= Environment (operational and ambient)
L= Liveware (people)

Figure 4.7-3. SHELL Interface Model

4.7.1.2.1 Functional Interfaces

Functional interfaces define the purpose of the interface. Each interface has at least two associated functions, and because all performance requirements are traceable to functions, there shall be at least two associated interface requirements. Figure 4.7-4 illustrates this concept, where side A delivers some quantity (e.g., electrical power) to side B; at the same time, side B receives that quantity from side A. The two implied requirements are:

- Side A shall generate the quantity
- Side B shall provide a compatible response to the quantity that side A delivered

Interface requirements shall be expressed in verifiable terms. For example, as expressed in strict requirements terminology, "the [side A] subsystem shall deliver electrical power at 28 volts." In this example, the element of Side B is a fan. Thus, the requirement for side B might be as follows: "The fan [side B] shall provide impedance, power level and timeline, while using the 28-volt power supply of the electrical system Interface [Side A]. "The interface definition includes the data and/or control functions and the way these functions are represented.

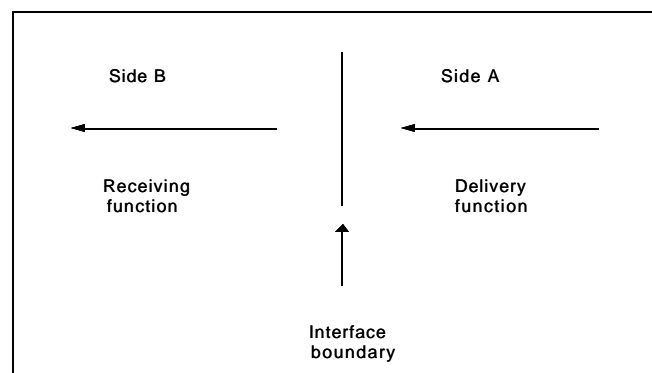


Figure 4.7-4. Example of a Simple Interface

4.7.1.2.2 Physical Interfaces

Physical interfaces are used to define and control the features, characteristics, dimensions, and tolerances of one design that affects another. Physical interfaces include material properties of the equipment that affect the functioning of mating equipment. They also include the system's operating environment.

4.7.2 Inputs to Interface Management

Table 4.7-2 lists the inputs to initiate Interface Management, including both program/project- and product-related data. Many of these inputs are developed and refined through the continuous, iterative processes of other SE elements.

Table 4.7-2. Interface Management Process Inputs

Input	Reference
Concepts	Functional Analysis (Section 4.4)
Architecture	Synthesis (Section 4.5)
Requirements (preliminary Program Requirements (pPR)/final Program Requirements (fPR)	Requirements Management (Section 4.3)
International Standards	System Engineering in the Acquisition Management System Program Lifecycle (Chapter 3)
FAA Order/Standards	System Engineering in the Acquisition Management System Program Lifecycle (Chapter 3)
Functional Analysis	Functional Analysis (Section 4.4)
Draft SE input to Implementation Strategy and Planning (ISAP)	Integrated Technical Planning (Section 4.2)
Trade Study Report	Trade Studies (Section 4.6)
Engineering solution actions and impacts	Trade Studies (Section 4.6)
Interface Control Planning	Integrated Technical Planning (Section 4.2)
Interface Change Request	Interface Management (Section 4.7)

4.7.3 Interface Management Process Steps

Interface Management is an SE element that helps to ensure that all the pieces of the system work together to achieve the system's goals and continue to operate together as changes are made during the system's lifecycle. It includes identification, definition, and control of interfaces. Table 4.7-3 outlines the process, and the subsequent subsections describe the process steps.

Table 4.7-3. Interface Management Process Inputs by Output Product

Inputs	Source Process	Initial AMS Phase	Output
Requirements Documents	Requirements Management (Section 4.3)	Mission Analysis	↓
Concepts	Functional Analysis (Section 4.4)	Mission Analysis	↓
Architecture	Synthesis (Section 4.5)	Mission Analysis	↓
Functional Interface List	Functional Analysis (Section 4.4)	Mission Analysis	↓
Operational System Environment Document (OSED)	Functional Analysis (Section 4.4)	Mission Analysis	↓
			Scope Sheet
FAA Policy	External	Investment Analysis	↓
Standards	External	Investment Analysis	↓
Draft Interface Control Planning section of System Engineering Management Plan (SEMP)	Integrated Technical Planning (Section 4.2)	Investment Analysis	↓
Requirements Documents (fPR)/Changes	Requirements Management (Section 4.3)	Investment Analysis	↓
System Requirements/Changes	Functional Analysis (Section 4.4) Synthesis (Section 4.5) Trade Studies (Section 4.6)	Investment Analysis	↓
Physical Architecture	Synthesis (Section 4.5)	Investment Analysis	↓
Trade Study Report	Trade Studies (Section 4.6)	Investment Analysis	↓
			IRD
IRD		Solution Implementation	↓
Interface Change Request	External	Solution Implementation	↓

Table 4.7-3. Interface Management Process Inputs by Output Product—Continued

Inputs	Source Process	Initial AMS Phase	Output
Physical Architecture	Synthesis (Section 4.5)	Solution Implementation	↓
Design Definition/Changes	Synthesis (Section 4.5)	Solution Implementation	↓
Final Interface Control Planning section of SEMP	Integrated Technical Planning (Section 4.2)	Solution Implementation	↓
			ICD
Interface Revision Proposal			Revised IRD/ICD

4.7.3.1 Step 1: Identify Functional/Physical Interfaces

The first step in the Interface Management process is to identify the functional and physical interfaces, which is accomplished using N-squared (N^2) diagrams. The functional interfaces are identified during the Mission Analysis phase, while the physical interfaces are identified during the Investment Analysis phase.

4.7.3.2 Step 2: Create an N^2 Diagram

The N^2 diagram is a **visual matrix representing functional or physical interfaces between system elements**. It is used as a systematic approach to identify, define, tabulate, design, and analyze functional and physical interfaces. It applies to system interfaces and hardware and/or software interfaces. The “N” in an N^2 chart is the number of entities for which relationships are shown. The N^2 diagram requires the user to generate complete definitions of all the system interfaces in a rigid bidirectional, fixed framework. In this method, the functional or physical entities are placed on the diagonal axis; the remainder of the squares in the $N \times N$ matrix represents the interface inputs and outputs. The presence of a blank square indicates that there is no interface between the respective functions. Interface information flows in a clockwise direction between functions (i.e., the symbol $F1 \rightarrow F2$ in Figure 4.7-5 indicates data flowing from function F1 to function F2; the symbol $F2 \rightarrow F1$ indicates the feedback). That which passes across the interface is defined in the appropriate squares. The diagram is complete when each entity has been compared to all other entities. The N^2 diagram shall be used in each successively lower level of decomposition. Figure 4.7-5 illustrates directional flow of interfaces between entities within an N^2 diagram. (In this case, the entities are functions.)

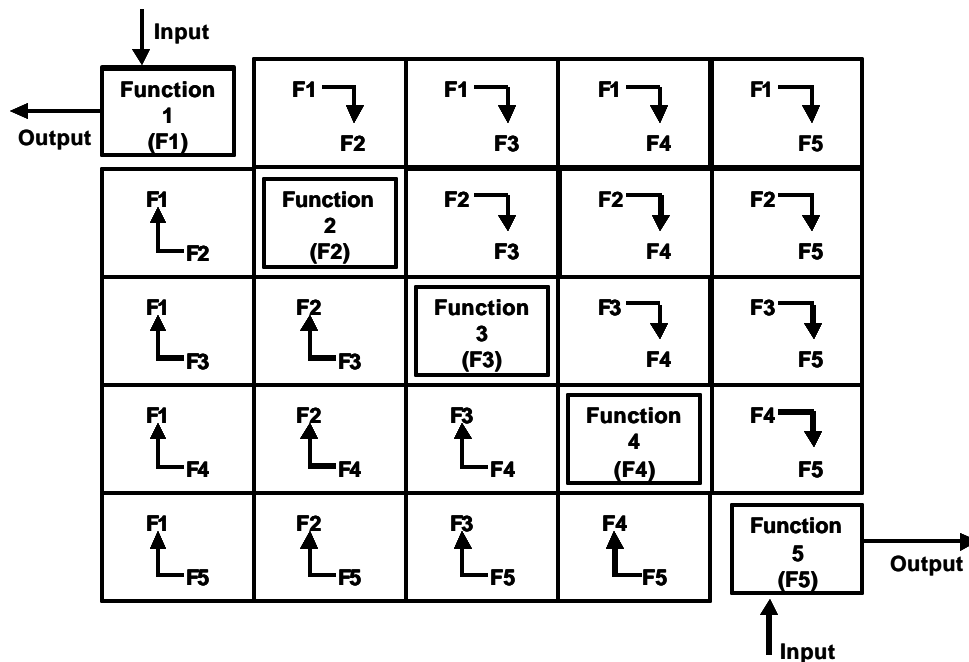


Figure 4.7-5. Generic N^2 Diagram

In the example in Figure 4.7-5, N equals 5. Here, the five functions are listed on the diagonal. The arrows show the flow of data between functions. So if function 1 sends data to function 2, an X would be placed in the box to the right of function 1. If function 1 does not send data to any of the other functions, the rest of the boxes to right of function 1 would be empty. If function 2 sends data to function 3 and function 5, then an X would be placed in the first and third boxes to the immediate right of function 2. If any function sends data back to a previous function, then the associated box to the left of the function would have an X placed in it. The squares on either side of the diagonal (not just adjacent squares) are filled in with appropriate data to depict the flow between the interfaces (functions). If there is no interface required between two functions, the corresponding square is left blank. Physical interfaces would be handled in the same manner.

In the example below (Figure 4.7-6), all data is acquired in function 1 from an external source. All acquired data is sent to function 2 for storage. However, some acquired data is sent to function 5 to be printed immediately. Therefore, there is an X in the first and fourth boxes to the right of function 1 showing this data flow. All data stored in function 2 can be retrieved by function 3. Function 3 sends the data to function 4 where it is reformatted and then sent to function 5 for printing. Thus, there is an X in the box to the immediate right of function 3 and 4. Since the system needs to save the reformatted data for possible retrieval and printing, there is an X in the box to the left of function 4 intersecting with function 2. However, since there may be a need for reformatted data to be printed at a later date, there is an X in the second box to the right of function 3, which shows the retrieval of reformatted data sent directly to the printer.

(If a functional architecture is provided, proceed directly to task 2). The following tasks are recommended for creating a functional N^2 diagram:

4.7.3.2.1 Task 1: Identify the Functional Interfaces Via an N^2 Chart and Develop Functional Interface List

- Create an N^2 diagram that is $N \times N$ square, where N is the number of system functions.
- Place the system functions on the diagram's diagonal axis.
- Moving across the diagram, fill in each square with any output, moving from function F_1 to any of the succeeding functions. (Interfaces between functions flow in a clockwise direction.) If there are no outputs to a succeeding function, leave the square blank. (Characteristics of the entity (e.g., data, electrical power) passing between functions may be included in the box where the entity is identified.) Continue in this fashion until the upper half of the N^2 diagram is populated.
- Moving down the diagram, fill in each square with any input, moving from function F_2 to function F_1 , from function F_3 to function F_2 or F_1 , and so on with succeeding functions. If there are no outputs to a succeeding function, leave the square blank. Continue in this fashion until the lower half of the N^2 diagram is populated.
- Conduct a peer review for completeness.

4.7.3.2.2 Task 2: Develop a Functional Interface List From the Functional N^2 Diagram

The next action is to identify the physical interfaces via the N^2 diagram during the Investment Analysis phase using the selected physical architecture.

4.7.3.2.3 Task 3: Identify the Physical Interfaces Via an N^2 Chart

- Create an N^2 diagram that is $N \times N$ square, where N is the number of system elements.
- Place the system elements on the diagram's diagonal axis.
- Moving across the diagram, fill in each square with any output, moving from system S_1 to any of the succeeding systems. (Interfaces between systems flow in a clockwise direction.) If there are no outputs to a succeeding system, leave the square blank. (Characteristics of the entity (e.g., data, electrical power) passing between systems may be included in the box where the entity is identified.) Continue in this fashion until the upper half of the N^2 diagram is populated.
- Moving down the diagram, fill in each square with any input, moving from system 1 to system 2, from system 3 to system 2 or 1, and so on with succeeding systems. If there are no outputs to a succeeding system, leave the square blank. Continue in this fashion until the lower half of the N^2 diagram is populated.
- Conduct a peer review for completeness.

4.7.3.2.4 Task 4: Develop a Physical Interface List From the Physical N² Chart

An example of an output from Task 3 appears in Figure 4.7-6. The N² diagram shall be taken down in successively lower levels to the hardware and software component levels. Another main function of the N² diagram in addition to interface identification is to pinpoint areas where conflicts may arise between systems and functions so that system integration occurring later in the development cycle proceeds efficiently.

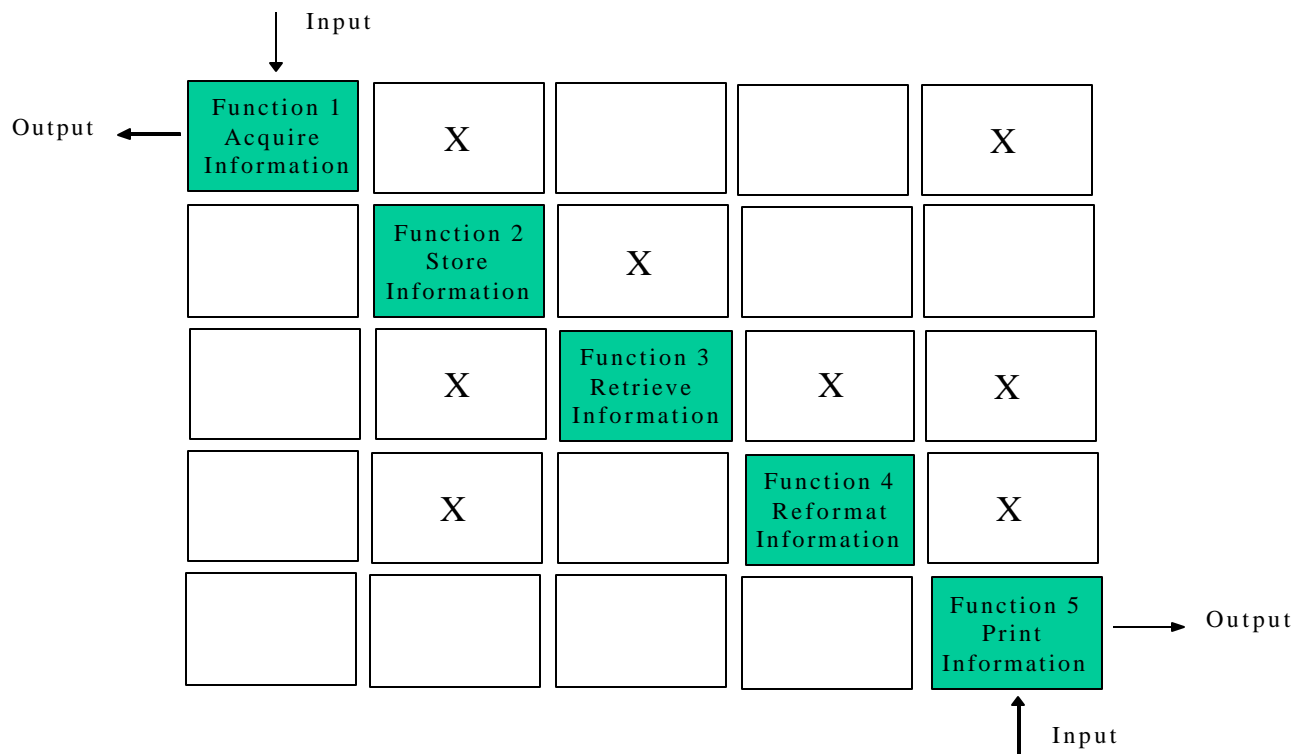


Figure 4.7-6. Example of a Simple N² Diagram

4.7.3.3 Step 3: Define Functional and Physical Interfaces To Prepare Scope Sheets

The third step in the Interface Management process is to define the functional and physical interfaces. This is achieved using scope sheets and IRDs. Scope sheets are used to develop the Interface Control planning section of the System Engineering Management Plan (SEMP). A summary of this information also appears in the Implementation Strategy and Planning (ISAP) (see Integrated Technical Planning (Section 4.2)). This Interface Control planning section defines a management system of interface controls to ensure physical and functional compatibility between interfacing system elements and between systems. This section also provides the means to identify and resolve interface incompatibilities and to determine the impact of interface design changes. Source material for the Interface Control planning section includes the concept documents, preliminary Program Requirements, and draft ISAP. Previously

developed N² diagrams are used to complete a scope sheet for each interface, which, in turn, is used to write the required IRDs.

The following tasks shall be performed when scope sheets are prepared:

- Review scope sheet format and example (Figures 4.7-7 and 4.7-8, respectively)
- Review functional and physical interface lists
- Prepare a scope sheet for each element in the diagonal, which corresponds to internal interfaces
- Review current program documents to determine required external interfaces
- Prepare scope sheets for all external interfaces
- Enter scope sheets into Configuration Management process (Section 4.11)

ICD NUMBER:		DATE INITIATED:	
REV:		DATE:	
ICD TITLE:			
PARTICIPANTS:			
SCOPE:			
EQUIPMENT RESPONSIBILITY:			
INTERFACE LOCATION (INTERFACE BLOCK DIAGRAM)			
PROGRAM REVIEWS and AUDITS:			
RELATED ICDs			
APPROVALS:			
Participant	Date:	Participant	Date:
IWG Secretariat	Date:	IWG Chairman	Date:

- Evaluate Scope Change Requests and update scope sheets as necessary

Figure 4.7-7. Format of Scope Sheet for Interface Management

ICD NUMBER: 25-DR010M REV: 1		DATE INITIATED: June 25, 3032 DATE: December 6, 3033	
ICD TITLE		Interface Control – Surveillance Radar Product Generator (RPG) – Weather System Processor (WSP) – Electrical Installation Envelope, Mechanical, Environmental, and Data	
PARTICIPANTS:		Green Electronics/Lockheed Martin	
SCOPE:		This IRD/ICD controls and documents all interface requirements for the RPG-to-WSP interface. Interface definition is described to the extent necessary to ensure compatibility of the RPG to WSP interfacing hardware when used with the specified constraints. The interface consists of mechanical installation of the WSP for cabling, mounting, environmental cooling, and data requirements. Mechanical interfaces include location, orientation, mounting provisions, and power supply. Envelope interfaces include installation, removal, connector, and cable clearances. Environmental interfaces include temperature and humidity constraints. The data interface includes Airport Surveillance Radar (ASR) 27 data (radio frequency, control, data, and timing signals) and WSP data (control and status signals).	
EQUIPMENT RESPONSIBILITY:		1. Green Electronics — ASR-27 radar product generator 2. Lockheed Martin — WSP module (hardware and software)	
INTERFACE LOCATION (INTERFACE BLOCK DIAGRAM)			
PROGRAM REVIEWS and AUDITS:		Initial Requirement Review September 3032, System Requirements Review December 3032, Preliminary Design Review March 3033	
RELATED ICDs:			
APPROVALS:			
Raytheon	Date:	Lockheed Martin	Date:
IWG Secretariat	Date:	IWG Chairman	Date:

Figure 4.7-8. Example Scope Sheet

4.7.3.4 Step 4: Develop Interface Requirements Documents

The next step in the Interface Management process is to develop IRDs, which, in turn, are used to develop ICDs. The designated custodian shall prepare the detailed IRD. FAA-STD-025 provides a checklist for IRD and ICD content. Commonly used FAA standards appear in Appendix G.

The following tasks shall be performed when IRDs are developed:

- Review the inputs listed in Table 4.7-2 (above)
- Prepare the detailed IRD in accordance with (IAW) FAA-STD-025
- Review the IRD for compliance with the final Program Requirements
- Coordinate the revised draft IRD with all affected organizations
- Enter the IRD into the Configuration Management process (Section 4.11)

4.7.3.5 Step 5: Write Interface Control Documents

During this step, the detailed ICD/Interface Control Request is prepared and an analysis is performed to confirm completeness and accuracy of the interface definition. Often, this step is simplified through the use of an automated tool (see subsection 4.7.5 below). These documents shall be reviewed for compliance with the defined scope sheets and coordinated. A record of these actions shall be maintained. FAA-STD-025 provides a checklist for ICD content. The sequential tasks for this step are listed below.

- Review the inputs listed in Table 4.7-2
- Prepare the detailed ICD IAW FAA-STD-025
- Review the ICD for compliance with IRD
- Coordinate the revised draft ICD with all affected organizations
- Send the ICD to the Configuration Management process (Section 4.11)

4.7.3.6 Step 6: Revise Interface Requirements Documents and Interface Control Documents

It may be necessary to request changes to the IRD/ICD as changes to Requirements or design definition occur. Following are the tasks for this step.

- Review the IRD for any required changes when design modifications occur or new requirements are added to the program requirements to determine if changes are required
- Review the ICD to determine if changes are also required
- Prepare the change request IAW FAA-STD-025 and provide the following information:
 - Description of the problem and the proposed change
 - Analysis showing how the change solves the problem
 - Analysis of how the change impacts system performance, effectiveness, and lifecycle costs

- Analysis to ensure that the proposed solution does not introduce new

Table 4.7-4. Interface Management Process Outputs and Destination SE Element

Outputs	Destination SE Element
IRDs	Requirements Management (Section 4.3) Configuration Management (Section 4.11) Synthesis (Section 4.5) Validation and Verification (Section 4.12)
ICDs	External Requirements Management (Section 4.3) Functional Analysis (Section 4.4) Specialty Engineering (Section 4.8) Configuration Management (Section 4.11) Synthesis (Section 4.5) Validation and Verification (Section 4.12)
Interface Change Proposal (ICP)	Configuration Management (Section 4.11)

problems

- Description of resources and an estimate of the costs associated with implementing the change
- Statement of impact to system
- Provide change request to IWG, which shall determine if the authorized Interface Change Request (ICR) is within the scope. In-scope ICRs shall be returned to the ICR originator and the custodian of the IRD/ICD for preparation and release of an interface requirement. Out-of-scope ICRs shall be forwarded to the program manager.
- Coordinate the draft IRD/ICD with all affected organizations
- Send Interface Change Request with revised IRD/ICD to the Configuration Management process (Section 4.11)
- Determine if IRD changes affect the program requirements and, if so, update them also

4.7.4 Outputs of Interface Management

The outputs of the Interface Management process appear in Table 4.7-4. When documented and approved, the IRD is provided to all applicable organizations, while the ICD is provided to technical disciplines responsible for meeting its interface requirements, to customer and program management for coordination, and to the respective test and quality assurance organizations.

4.7.5 Interface Management Tools

The primary tool of Interface Management is a word processing tool. The FAA is developing a Web-based tool for development of IRDs and ICDs, which is currently being tested. It creates the document template for easy insertion of the appropriate interface data. For example, if a network IRD is selected, the document template only contains those paragraphs appropriate for a network IRD. Also, the tool automatically creates the Verification Requirements Traceability Matrix from the requirements inserted. Recommended interface requirements are inserted in the requirements database.

4.7.6 Interface Management Process Metrics

Table 4.7-5 lists the Interface Management process metrics.

Table 4.7-5. Interface Management Process Metrics

Quality Metrics	Cycle Time Metrics	Cost* Metrics
Scope Sheet in Compliance with Requirements (% "Yes")	Time from pPR to IRD Approval	Cost to implement IRDs
IRD in Compliance with Requirements (% "Yes")	Time from IRD Approval to ICD Release	Cost to implement ICDs
ICD/Interface Requirement Compliance with Interface Requirements (% "Yes")	Time from ICR Approval to Interface Requirement Release	Cost to implement ICRs
Design Compliance with ICD/Interface Requirement Requirements (% "Yes")		
Number of interfaces discovered after initial release of ICD		

*Note: Cost is only direct program costs.

4.7.7 Terms and Definitions

Interface: The performance, functional, and physical attributes required to exist at a common boundary.

Interface Requirements: Requirements specifying the performance, functional, or physical attributes that are required to exist at a common boundary. This boundary can exist between two or more functions, systems, system elements, configuration items, or systems.

IRD: Document that provides the FAA interface requirements between two elements, including type of interface (e.g., electrical, pneumatic, hydraulic, etc.) and the interface characteristics (performance, functional, or physical). In its final form, the IRD is primary documentation of the interface requirements.

ICD: The “design” document that describes the detailed “as built” implementation of the requirements contained in the IRD. The ICD is one of the two primary products of the interface process and is usually developed by the vendor.

Interface Control Planning Section of SEMP: This section documents the formal management system of interface controls that ensures interface compatibility. Integrated Technical Planning (Section 4.2) provides detailed instructions on this topic.

IWG: The forum established through the SEMP and ISAP for discussing interface issues. IWG meetings serve two purposes: to ensure effective, detailed definition of interfaces by all cognizant parties, and to expedite baselining of initial IRDs, ICDs, and subsequent drawing changes by encouraging resolution of interface issues. The IWG shall consist of IWG chair, IRD/ICD custodian(s), and management personnel from associated teams. (Integrated Technical Planning (Section 4.2) provides detailed instructions on this topic.)

4.7.8 References

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